What is claimed is:

1. An apparatus for establishing a two-dimensional layout of a physical structure, comprising:

    a mechanism for forming a first linear representation of the layout of the exterior of the structure, the forming mechanism connected to an input device that generates the first representation;

    a distance measuring device for scanning under the direction of an operator the exterior walls of the structure, starting at a first corner and scanning to a second distal corner, sequentially measuring the lengths of each exterior wall until all structure walls have been measured;

    an angle measuring device for scanning under the direction of the operator the exterior walls of the structure, starting at the second corner and sequentially measuring the relative angles between adjacent walls until all relative angles between structure walls have been measured;

    data transfer devices to transmit the distance and angle measurements; and

    a memory which receives and stores the distance and angle data.

2. The apparatus as described in claim 1 wherein the distance measuring device is a portable laser rangefinder.

3. The apparatus as described in claim 1 wherein the distance measuring device is a portable sonar type rangefinder.

4. The apparatus as described in claim 1 wherein the angle measuring device is a gyroscope.

5. The apparatus as described in claim 1 wherein the angle measuring device is a theodolite.

6. The apparatus as described in claim 1 wherein the forming mechanism includes a computer and associated software connected to the memory.

7. The apparatus as described in claim 1 wherein the memory transmits the data to a remote computer that communicates with the forming mechanism.

8. The apparatus as described in claim 6 wherein the input device is connected to the computer

and is manually directed by the operator, and the input device is at least one of a stylus, mouse or keyboard.

9.   The apparatus as described in claim 6 wherein the input device is capable of receiving a pre-existing digitized blueprint and transmitting the blueprint to the computer.

10.   The apparatus as described in claim 6 wherein the computer and associated software adjust the scale of the line segments of the first linear representation based on the distance measurements stored in memory.

11.   The apparatus as described in claim 10 wherein the computer and associated software adjust the relative angles between the line segments of the first linear representation based on the angle measurements stored in memory.

12.   An apparatus for establishing, on-site, a two dimensional floor plan for a physical structure, comprising:

> a portable computer capable of running software;
>
> at least one input device to manually sketch initial first dimensions of objects within a physical structure onto a display screen of the computer;
>
> a portable device for measuring distances between objects within a structure;
>
> a portable device for measuring relative angles between objects within a structure;
>
> means to transmit linear and angular measurements to the computer;
>
> a memory which receives and stores the distance and angle data; and
>
> customized CAD software running on the computer that is configured to calculate an appropriate display scale to show on the screen, and to adjust the first linear representations so that they conform to the calculated display scale, and to adjust the relative angles between objects based on the measurements received from the portable measuring devices.

13.   The apparatus as described in claim 12 wherein the memory includes a mechanism for displaying a menu having symbols of features, including a door and a window on the screen, said symbols able to be chosen from the menu and placed in the line segments on the screen of the first room data, said displaying mechanism connected to the computer.

14. The apparatus as described in claim 13 wherein the memory includes a mechanism for editing the line segments of the room data, said editing mechanism connected to the computer.

15. A method for establishing a two-dimensional exterior layout of a physical structure, comprising

forming a first representation of the layout with a computer and input device;

displaying the first representation of the layout on a screen;

placing a portable scanning device adjacent to an exterior corner of the structure;

scanning the distances and relative angles between all adjacent exterior walls; and

transmitting the distances and relative angles to the computer so that it can adjust the lengths and angles of the initial linear representations to match an appropriate display scale.

16. The method as described in claim 15 wherein the input device is capable of receiving a pre-existing digitized blueprint and transmitting the blueprint to the computer.

17. The method as described in claim 15 wherein the input device is connected to the computer and is manually directed by the operator, and the input device is at least one of a stylus, mouse or keyboard.

18. A method for generating a digital, two-dimensional floor plan for a physical structure, comprising the steps of:

creating a first linear representation of a first object of the structure on the display screen of a portable computer running CAD software using at least one input device;

pointing a device that measures the distance from the starting corner position of the first object to the ending corner position;

transmitting the distance data to the computer;

calculating the ratio between the first linear object representation and the measured linear dimension of the object;

displaying the adjusted wall length on a display screen;

drawing a linear representation of a second object that is adjacent the first object;

pointing the distance measuring device from the ending corner position of the first object, to

the far corner position of the second object to measure a new distance;

pointing a device that measures the relative angle between the second object and the first object;

transmitting the second distance and angle to the computer, so that the length of the second linear representation can be adjusted to match an appropriate display scale, and the relative angles between the objects can be adjusted to match the measured relative angles;

displaying a revised representation of the adjusted wall on the display screen; and

repeating the previous four steps until the relative lengths and angles of every exterior object of the structure are calculated and displayed onto the screen.

19.   The method as described in claim 19 including after the first exterior scanning step, there are the steps of:

removing the distance and angle measuring devices from the exterior of the building;

placing the distance and angle measuring devices at or near a corner of a first interior room, the first room located in a corner of the building;

directly measuring the dimensions of the two nearest walls, and the relative angles between them, using the distance and angle measuring devices;

measuring the distance and angle from the first initial corner to the distal corner that is furthest away from the initial corner;

transmitting the distance and angle data to the computer;

calculating the dimensions of the two furthest walls by a triangulation technique;

scaling of data to conform to the previously determined scale; and

displaying a revised representation of the adjusted interior walls on the display screen.

20.   The method as described in claim 20 including after the first interior scanning step, there are the steps of:

removing the distance and angle measuring devices from the first interior room of the building;

placing the distance and angle measuring devices at or near a corner of a second interior room, the second room adjacent the first room;

directly measuring the dimensions of the two nearest walls, and the relative angles between them, using the distance and angle measuring devices;

measuring the distance and angle from the initial corner to the distal corner that is furthest away

from the initial corner;

transmitting the distance and angle data to the computer;

calculating the dimensions of the two furthest walls by a triangulation technique;

scaling of data to conform to the previously determined scale; and

displaying a revised representation of the adjusted interior walls on the display screen.